DOCUMENT RESUME

ED 435 076 CG 029 544

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TITLE Treating ADHD with Hypnosis and Neurotherapy.
PUB DATE 1999-08-00
NOTE 21p.; Paper presented at the Annual Convention of the American Psychological Association (107th, Boston, MA, August 20-24, 1999).
PUB TYPE Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Attention Deficit Disorders; Behavior Modification; *Clinical Diagnosis; Demography; Electroencephalography; Evaluation; *Hyperactivity; *Hypnosis; Neuropsychology; Research
IDENTIFIERS Cognitive Behavior Therapy; Medication

ABSTRACT

Traditional diagnosis procedures for Attention Deficit Disorder (ADD)/Attention Deficit Hyperactivity Disorder (ADHD) may lead to over-diagnosis and are fraught with complications because the target behavioral symptoms are found in a variety of other disorders. Traditional treatments consisting of powerful side effect laden psychostimulant drugs and/or complex costly behavioral modification programs are at best symptom focused and palliative in nature. Both diagnostic and treatment advances derived from the neurological basis of the disorder are needed, as are habilitative treatment alternatives. This paper presents the procedural details of Instantaneous Neuronal Activation Procedure (INAP) alert hypnosis as an adjunct to neurotherapy in the treatment of ADD. ADD/ADHD diagnostic issues, demographics, traditional treatments, neurological basis, EEG assessment, and implications for the use of hypnosis are reviewed. Recent research demonstrating the efficacy and promise of neurotherapy with and without INAP alert hypnosis is discussed. (Contains 54 references.) (MKA)

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ED 435 076

TREATING ADHD WITH HYPNOSIS AND NEUROTHERAPY

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INVITED ADDRESS

1999 Annual Convention of the American Psychological Association
Haynes Convention Center
Boston

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ABSTRACT

Traditional diagnostic procedures for ADD/ADHD may lead to overdiagnosis and are fraught with complications because the target behavioral symptoms are found in a variety of other disorders. The many decades old traditional treatments consisting of powerful side effect laden psychostimulant drugs and/or complex costly behavioral modification programs are at best symptom focused and palliative in nature. Both diagnostic and treatment advances derived from the neurological basis of the disorder are needed as are habilitative treatment alternatives.

This paper presents the procedural details of our Instantaneous Neuronal Activation Procedure (INAP) alert hypnosis as an adjunct to neurotherapy in the treatment of attention deficit Disorder. ADD/ADHD diagnostic issues, demographics, traditional treatments, neurological basis, EEG assessment and implications for the use of hypnosis are reviewed. Recent research demonstrating the efficacy and promise of neurotherapy with and without INAP alert hypnosis is discussed.

Once most widely known as MBD (minimal brain dysfunction) or MCD (minimal cerebral dysfunction) the term attention deficit disorder has been adopted for the condition which is characterized by the inability to self-regulate focused attention. It is a biologically based, developmentally disabling condition, which has a pervasive negative impact on adaptive functioning. It is one of the most frequently diagnosed disorders among school children.

For decades, treatment has been limited to management through the use of powerful stimulant drugs, such as Methylphenidate (Ritalin), and/or traditional behavior modification. While national concerns about trafficking and abuse of methamphetamine have fostered the search for more suitable treatments, there are many other reasons to be concerned about the long term use of psychostimulant drugs and behavior modification programs which by their nature are at best palliative (Frussner, 1998; Gaddes & Edgell, 1994, p. 279). Cessation of either treatment results in the rapid return of pretreatment symptoms and dysfunction. Given that school aged boys in the United States consume nearly 9 tons of Ritalin a year (Feussner, 1998), it would seem obvious that treatments that go beyond symptom management are urgently needed. Neurotherapy (brainwave biofeedback) provides a habilitative alternative to traditional approaches but typically takes 40 to 80 sessions or more to achieve lasting effects. However, alert hypnosis as an adjunct to neurotherapy may make it possible to reduce treatment time by half while potentiating the efficacy of behavioral neurotherapy.

Just a few years ago, Dr. Marianne Barabasz and I had the honor of introducing the use of alert hypnosis as an adjunct to neurotherapy, for ADD and ADHD in the lead article in the first issue of the Journal of Neurotherapy (Barabasz & Barabasz, 1995). The following year gave us the opportunity to elaborate further in a chapter for the Lynn, Kirsch and Rhue (1996) Casebook of Clinical Hypnosis and a special issue of the Child Study Journal on ADHD. We attended to Erika Fromm's (1981) and our own (M. Barabasz, A. Barabasz & Blampied, 1996) guidelines for clinical studies. We intended to communicate to other clinicians our new technique, observations, and findings. We assured ADD/ADHD diagnostic criteria were met, reviewed patients' histories and prior treatments, obtained hypnotizability data, and provided details of the induction and suggestions used. The results were promising.

A more rapid response to neurotherapy was obtained when alert hypnosis was added to therapy. About half of the usual number of sessions were needed to achieve apparently lasting improvements in behavior and learning, school grades, parent-teacher behavior rating scores and even IQ test performance. In every one of our cases dependence on Ritalin (methylphenidate), the FDA and DEA schedule II narcotic drug, was eliminated. However, these early attempts were limited to the case study level as was also true for the dozens of neurotherapy (EEG Feedback) papers published on the treatment of ADD and ADHD prior to 1995.

In 1995, Neurotherapy was attacked by the drug company supported national organization for those with ADHD in their newsletter CHADD (Children and Adults with Attention Deficit Disorder). Parents were warned against "investing time, money and their child's interests in unproven, questionable treatments, such as EEG Biofeedback (CHADD, 1995, p.1)." Instead, it was recommended that parents "only provide their children treatments that have been scientifically proven to be safe and effective (drugs and behavior modification) warning that EEG Biofeedback is the controversial therapy of the moment (p. 4)." Hypnosis was not attacked but further research was clearly needed which independently addressed clinical efficacy beyond the case study level for both neurotherapy (neurofeedback) and neurotherapy combined with hypnosis. Much has changed during the past few years. Clinicians and researchers have worked to shed additional light on the efficacy of this side effect free non invasive treatment which is intended to habilitate rather than merely symptom manage the patient.

As requested in the invitation to publish our latest findings in this special issue of the Child Study Journal, diagnostic issues, demographics, neurological basis, assessment and implications for hypnosis as well as traditional treatments will be briefly reviewed. Neurotherapy and our alert hypnosis procedure is discussed in some detail and the latest studies on clinical efficacy will be reviewed.

Diagnostic Issues

The Diagnostic and Statistical Manual of Mental Disorders: DSM-IV (APA, 1994) is the accepted choice for the diagnosis and sub-typing of ADD/ADHD. The diagnosis is made by an accumulation of several symptoms with a typical onset after age 7. No single symptom is required

to make a diagnosis nor is any single symptom definitive of the syndrome. Unfortunately, the DSM-IV is still limited to reports of behavioral observations to make the diagnosis without any attempt to relate known brain activity of the disorder to help establish the diagnosis (see Sterman elsewhere in this issue and A. Barabasz & M. Barabasz, 1996; M. Barabasz & A. Barabasz, 1996)

Although attention deficit disordered children may exhibit more neurologic soft signs in both gross and fine motor coordination and children show task performance difficulties when the task demands require executive function processing to solve complex problems. Lack of organization and controlling their own behaviors are expressed in great variability in school work or task performance, but contrary to popular notions, these children can become thoroughly absorbed in certain tasks for long periods of time but not on others. Children we have seen have been able to concentrate on computer or reading activities for hours at a time yet were unable to complete less entertaining tasks such as chores, homework, or school tests. Such performance variability is characteristic of the attention deficit disordered child, adolescent and adult (Barkley, 1990). Because of their impulsivity ADD/ADHD children may respond prematurely without appreciating what is required by a specific task. The result is a high careless error rate and frequent involvement in high risk behaviors. Potentially destructive or even life threatening situations are not evaluated.

Demographics

According to Whalen & Henker (1991), ADD/ADHD prevalence rates range from 5 - 15% in community samples and 50% or higher among clinical referrals . The DSM-IV (p. 82) suggests that the disorder is substantially more frequent in males than in females with male-to-female ratios ranging from 4:1 to 9:1. However, we hypothesized that this apparent differential prevalence rate may be erroneous. Barabasz and Barabasz (1993b) showed that when males and females are compared to their same sex normative groups and appropriate controls are added for symptoms of hyperactivity and antisocial behavior the occurrence of ADD in males and females may be equal. Females with ADD present with problems in mood, affect and emotion while showing considerably less difficulty than boys with aggression. Girls are more socially withdrawn and show more internalizing symptoms such as depression and anxiety

than found in boys (Brown, Abramowitz, Mada-Swain, Eckstrand, & Dulcan, 1989). The majority of ADHD children are referred to mental health clinics because of aggression and other forms of misbehavior which are more common in boys. Because of these biases and the earlier DSM-III R (APA, 1987) diagnostic criteria favoring hyperactivity, girls may have been denied needed treatment more frequently than boys. Clearly, more than mere reliance on behavioral observation is needed if diagnosis of the disorder is to become more accurate.

Neurological Basis, Assessment, and Implications for Hypnosis

The national news media has been fascinated by sensational correlational studies about ADHD which provide, at best, speculations about the role of food additives, dietary sugar, smoking, allergies, and alcohol use during pregnancy. In contrast, considerable serious research has been progressing systematically which extends the neurological underpinnings of the disorder. Neuro-imaging morphological procedures show that children with the disorder fail to show the normal right-greater-than-left asymmetry in the mass of the frontal lobes (Hynd, Hern, Voeller & Marshall, 1991). This important finding is reflected in ADD/ADHD diagnostic EEGs which show hypercoherence between left and right frontal recordings in controls to those without the disorder (Charbot et al., 1999). Consistent with this finding, computerized quantitative electroencephalographic (QEEG) analysis (neurometric assessment) shows significantly greater slow wave (theta) activity and significantly less beta activity in the frontal and central regions for those with ADD/ADHD (Barabasz, Crawford & Barabasz, 1993; Charbot, Orgill, Crawford, Harris, & Serfontein, in press; Hughes & John, 1999; Mann, Lubar, Zimmerman, Miller & Muenchen, 1992). Because there can also be excess theta or low alpha in other cortical regions (Chabot & Serfontein, 1996; Matsuura et al., 1993, Suffin and Emory, 1995) a standard 19 lead EEG neurometric assessment including quantitative EEG (QEEG) brain mapping should be considered a diagnostic prerequisite to neurotherapy for the disorder. The data showing the ability of QEEG to differentiate children with ADD from controls is now quite substantial (see Charbot, Orgill, Crawford, Harris, & Serfontein, as well as Sterman in this Child Study Journal issue for reviews).

Although excess theta and/or low alpha can be greatest in the anterior cortical regions (see Sterman - article in this Child Study Journal issue),

the evidence suggesting frontal and central cortical dysfunction as a basis of attention deficit disorders is particularly well established (reviewed by M. Barabasz & A. Barabasz, 1996). Frontal lobe functions are critical in mustering inhibitory behaviors such as controlling motor behavior and inhibiting attentional focus on distractor or irrelevant stimuli. The frontals are executive in nature and are involved in developing plans and organizing resources. This leads us to the implication of the utility of hypnosis from both a theoretical and empirical perspective. Hilgard's (1992) neo-dissociation theory of hypnosis explains how "divisions in executive function bear importantly upon the divided roles within the monitoring function of hypnosis (p. 96)." Furthermore, there is now substantial replicated experimental research to show the direct effects of hypnotic suggestions on EEG. Focusing of the central cortical regions, Barabasz, Barabasz, Jensen, Calvin, Trevisan, and Warner (1999) revealed markers of the hypnotic state and demonstrated that alternative hypnotic suggestions can produce reliable differences in EEG event related responses.

Traditional Treatments : A Brief Review

Psychostimulant drugs - At nearly 9 tons prescribed per year, methylphenidate (Ritalin) leads the list for consumption by 600,000 to 1 million U. S. school children. However, contrary to medical lore regarding the supposed effectiveness of such drugs and the pronouncements of the CHADD Newsletter, a "review of reviews" conducted by 15 co-authors (Swanson, et al. 1993), comprehensively examined 341 research reviews and found that medication "does absolutely nothing" for 25% - 40% of children with the disorder. For those who do respond, temporary management of over-activity and inattention can be expected but there will be no improvement in long-term adjustment, no improvement in academic achievement nor any reduction in anti-social behaviors or arrest rates (Swanson, et al., 1993). Could it be that the popularity of drugging children to manage over-activity rests more with the benefits to parents and teachers than for the children involved?

The side effects and limitations of stimulant medications include: 1) short length of action (4 - 5 hours); 2) problems with the child's self esteem due to taunting by peers; 3) stunting of growth; 4) insomnia; 5) poor eating; 6) tics; 7) cardiovascular problems; 8) potential development

of Tourettes syndrome; 9) cognitive impairment with high doses; 10) no residual effect once medication is terminated; and 11) a small, but significant, number of cases show negative physiological side effects that do not diminish over time despite cessation of the medication (Whalen & Henker, 1991). Failure to take the medication as directed is a significant problem, with compliance rates especially problematic for low socioeconomic families. Adolescents are frequently unwilling to take psychostimulants.

Behavior modification A feature of this old but widely used approach can be the collaborative involvement of both parents and teachers. Therapists train parents to use token economies, positive attention for appropriate behaviors and time out or other punishments for non-compliance (Gaddes & Edgell, 1994; Whalen & Henker, 1991). Teachers can use classroom contingency management administering verbal praise and other rewards for appropriate attentive behaviors and withdrawal of privileges or punishments for undesirable behaviors. Limitations of behavior modification include: 1) not all children respond to the treatment, 2) there is no carryover to the classroom of behaviors learned only with parents, and 3) pre-treatment behaviors rapidly return to baseline/pre-treatment levels upon cessation of the interventions, 4) 50 % of parents discontinue it because of it's complexity, and 5) dependence on both parental and teacher co-operation makes the necessary continuation of the approach all but impossible over the long term without essentially ongoing regular sessions with a therapist and associated high total costs (Firestone, Kelly, Goodman, & Davey, 1981).

Cognitive-behavior therapy has greater flexibility than behavior modification and/or medication but so far has failed to demonstrate any lasting effects with children with Add/ADHD (Conte, 1991). However, it may still have promise because he addition of hypnosis might someday make it viable. Kirsch, Montgomery and Saperstein's (1995) meta-analysis showed that the addition of hypnosis to cognitive-behavior therapy greatly improved treatment outcomes and long term effects for a variety of disorders. Research is needed to test the addition of hypnosis to cognitive-behavior therapy for ADD/ADHD.

Neurotherapy (EEG feedback,neurofeedback) is a relatively new habilitative approach to the treatment of ADD/ADHD. The goal is

permanent normalization without dependence on drugs or continuous behavioral management therapy. Consistent with its neurological basis, those with attention deficit disorder produce greater EEG slow wave (theta) activity (4 - 8 Hz) and less beta (14- 32 Hz) activity compared to normal controls (see Sterman article in this Child Study Journal issue for a comprehensive review). Logically, the most appropriate treatment for the disorder should be derived from and focused on the underlying problem. Neurotherapy is intended to teach patients to normalize their brainwave responses to stimuli (Barabasz, et al., 1993, 1995; A. Barabasz & M. Barabasz, 1996; Mann, et al., 1992). The procedure is an extension of a breakthrough by Sterman and Friar (1972), who discovered that brainwave feedback made it possible to learn to inhibit epileptic seizures by enhancing low beta also known as sensory motor rhythm (SMR) (13 -16 Hz) while simultaneously minimizing theta in patients who did not respond to medication. Neurotherapy "is the most promising" of the alternatives for the treatment of ADD/ADHD. Indeed, as Sterman notes "While the concept (neurofeedback) may seem novel to some, the learned modification of behavioral responses through the manipulation of feedback rewards is, in fact, a well established scientific principle" (see Sterman article in this Child Study Journal issue).

When a person without ADD is presented with an attentional task, such as reading, doing simple arithmetic or listening to a story, his/her EEG's usually shift to the beta frequency band with an increase in magnitude with projection to the frontal and central regions. In contrast, Lubar (1991) notes that persons with attention deficit disorder do just the opposite. Instead, they shift down into the slow theta frequency band without any significant increase in frontal activity (Barabasz, et al., 1993, A. Barabasz & M. Barabasz, 1996; M. Barabasz & A. Barabasz, 1996; Lubar, 1991; Mann, et al., 1992). The slow activity (e.g. remaining in the lower alpha range of 8-12 Hz or dropping down to theta) is characteristic of the wandering mind, non vigilance, and unfocused thought.

In neurotherapy, EEG responses to stimuli displayed on a computer screen are real time analyzed. Then the computer provides feedback information, in the form of visual displays and auditory tones showing how well the subject is doing. Problems inherent in the EEG biofeedback apparatus of the 1970's and 80's have been overcome. Patients are now only provided with reinforcement for EEG responses which are essentially artifact free when state of the art technology is employed. Recently, Allen

Pope of NASA's Human Engineering Group and Edward Bogart of Lockheed Sciences, developed the concept further by producing a video game which becomes more difficult as the attention deficit disordered child's brain waves show attention is waning (Pope & Bogart,1996). As in the more established forms of neurotherapy, this approach rewards children for decreasing time spent in slow wave activity and increasing the time they spend in the fast activity required for focused attention and concentration on tasks.

Candidates for neurotherapy include stimulant medication non-responders, persons with suspected stimulant use disorder and children of parents who are skeptical about the unknown deleterious effects of long term stimulant drug use. Before commencing neurotherapy, a neurometric assessment involving a computer analysis of a minimum of 19 active scalp electrode sites should be conducted to confirm or disconfirm the above reactivity to key attentional tasks (also see Sterman in the Child Study Journal issue. Patients who demonstrate EEG responses to attentional tasks that are characteristic of those with attention deficit disorder are appropriate candidates for neurotherapy. Data bases to assist diagnosis are now available and the American Psychological Association (APA) has approved training programs in Neurotherapy for continuing education (CE) credit for licensed psychologists (APA Monitor).

Neurotherapy Efficacy

Perhaps the earliest attempt to obtain a systematic examination of Neurotherapy was conducted by Lubar and Shouse (1977) who treated groups of ADD children with the now standard protocol (reinforce Beta and inhibit Theta). Using an A-B-A design, the protocol was then switched to inhibit Beta and enhance Theta. The children, parents, and teachers were kept masked regarding the switch but within two weeks they began reporting that children's' behaviors and attentional skills were deteriorating. Returning to the standard protocol at 4 weeks, the children, parents, and teachers noted resumption of academic and behavioral improvements.

The first multi-site evaluation was conducted by Chartier and Kelly (1991) who reviewed the effects of neurofeedback for ADD/ADHD from over 200 children treated by Dr. Joel Lubar at the University of Tennessee, Dr. John Carter at the University of Texas, and Dr. Michael Tansey of

Sommerville, New Jersey. Chartier and Kelly found neurofeedback training to provide significant and sometimes "dramatic" clinical improvements which were lasting.

Russell Barkley's (1992) assertion, reiterated in the CHADD (1995) newsletter, that "there is not enough evidence from well controlled scientific studies to support the effectiveness of EEG biofeedback for AD/HD children" may have been justified at the time but seems no longer valid. Research using a variety of control groups (e.g., waiting list, pseudo-treatment, psychostimulants, cognitive-control therapy) has demonstrated that neurofeedback reduces inattention, impulsivity, task performance variability, and hyperactivity (Cartozzo, Jacobs & Gervirtz, 1995; Linden, Habib & Radojevic, 1996; Scheinbaum, Zecker, Newton & Rosenfeld, 1995). Furthermore, neurotherapy has been found to be as effective as stimulant drugs in controlling ADD/ADHD symptoms (Rossiter & La Vaque, 1995; Rossiter, 1998). Outcome studies with samples as large as 530 (e.g. Kaiser & Othmer, 1997; Kaiser, 1997; Lubar et al., 1995) have demonstrated a significant reduction in symptoms with children, adolescents, and adults treated with neurotherapy. All of the studies above used objective test data (Conners-Continuous Performance Test, Test of Variables of Attention, Wechsler Scales) and/or physiological data (QEEG) as well as behavioral ratings to assess treatment efficacy. Supporting Lubar's (1995) conclusion that Neurotherapy leads to a "normalization" of behavior enhancing both long-term academic performance and social functioning, this research provides persuasive evidence that neurotherapy is an effective treatment for ADD/ADHD. Greater acceptance in the medical community has been achieved (Tan & Schneider, 1997) because a variety of neurofeedback protocols with patients of varying ages have produced remarkably consistent results.

Limitations of neurotherapy include: 1) the large number of sessions (up to 80; 6 - 8 months) required for lasting clinical and academic changes to occur; 2) the need to better identify the match between patient and technique, and 3) over enthusiasm by some practitioners who may be willing to apply the treatment solely on the basis of a DSM-IV diagnosis without a 19 lead neurometric assessment. Without such assessment it is virtually impossible to separate placebo and extra clinical effects from those produced by neurotherapy.

Hypnosis as an adjunct to Neurotherapy

Despite many theories of hypnosis, there is agreement that hypnosis involves the subject's attentional processes (reviewed by M. Barabasz & A. Barabasz, 1996). Hypnosis is a state of attention that may be focused, to exclude distractors, or diffuse depending on the instruction (Barabasz et al., 1999; Fromm, 1987; Hilgard, 1965, 1986).

Hypnosis can also serve to facilitate the more general attentional processes involved in vigilance. Barabasz (1980) used hypnosis to enhance military target detection in a radar simulator. Military pilot instrument flight reliability has been improved with alert hypnosis to help optimize pilots' situational awareness with regard to cockpit navigation cues (Barabasz, 1985). Recently, we extended the alert hypnosis INAP protocol to enhance airline pilots' flight training performance in full motion Boeing 737 simulators in Seattle.[2]

The INAP intervention has also demonstrated significant effects in an experiment with normal young adults of average hypnotizability. We, (Barabasz and Barabasz,1994a) embedded the procedure into an EEG neurological screening aspect of another study unrelated to hypnosis. Eleven subjects were exposed to counterbalanced conditions of waking, attentional instructions, and INAP hypnosis instructions emphasizing speed and memory retention prior to reading parallel forms of a standardized reading comprehension test. Both attentional instructions and INAP hypnosis significantly increased BETA magnitude at frontal sites while significantly increasing reading speed, but only INAP hypnosis served to significantly increase reading comprehension performance. Unfortunately, testing of long term effects was beyond the scope of the study.

INAP alert hypnosis is a procedure intended to enhance vigilance performance for either focused attention or optimal situational awareness depending on the specific hypnotic instructions given (Barabasz, 1985; 1993b, 1994a). As discussed above, experimentally controlled studies show that INAP can increase frontal EEG Beta activity

[2] The project is progressing under a partnership agreement between Washington State University's College of Education and Simulator Training Incorporated (STI), Seattle

independent of neurofeedback (Barabasz & Barabasz, 1993b; 1994a,b; Barabasz, Crawford, & Barabasz, 1993). Thus far, our INAP research has been primarily aimed at the achievement of immediate attentional effects with those of average to high hypnotizability. Long-term effects and potential effects for individuals with below average hypnotizability scores remain to be tested.

Standard INAP procedure is conducted in two distinct phases (A. Barabasz & M. Barabasz, 1994 a,b; 1996). In the training phase, the patient is instructed to roll eyes up, as if trying to look at their forehead. Their eyes are also led to this position by instructions to focus on the psychologist's thumb. The thumb is then moved slowly from 10 - 15 cm in front of the patient's nose to the approximate center of his/her forehead. Speed of movement must be carefully coordinated with the patient's ability to follow without swimming of the eyes or obvious loss of focus. When eyes dart or focus seems to be lost the procedure should be reinitiated. Normal adults seldom have a problem with this procedure (Barabasz & Barabasz, 1994b) but clinical experience and patience may need to be brought to bear in the treatment of hyperactive children to get eyes as fully rolled up as possible and then kept steadily rolled up as required for successful INAP effects. Allow therapy time for practice trials using ample verbal reinforcement ("good, that's it" or "good job") to maintain an eyes-steady rolled-up position. Once the eyes are fully and steadily rolled up, instructions are then given to take notice of breathing, relaxation, calm confidence and special calm alertness felt at this point.

Once subjective signs of hypnosis are observed by the experienced clinician (specific signs to be observed are left to ones' professional training in hypnosis and experience), the patient is asked to raise a finger upon perception of the suggested responses, "... just lift a finger on this hand (for right handed patients the clinician touches patient's left hand) when you feel the comfortable relaxation and special calm alertness." Upon observation of the patient's signal, which should occur within 5 - 10 seconds, the patient is given the attentional process specific suggestions such as "in this special state of alertness you will be able to focus your attention anyway you like, you can concentrate as completely as you desire." In the adult reading speed and comprehension enhancement study we (Barabasz & Barabasz, 1994a,b) used the suggestion, "Now in this special state of alertness, you will be calm and confident - finding it easier to concentrate completely - reading faster than ever and retaining

what you read." Variations of these suggestions can be used as required by the task. Upon completion of the suggestion the patient is told to let their eyes roll down and enjoy the calm alert feelings. Then the specific attentional task is begun. Once the patient begins to learn exactly what each of the graphic video feedback displays represent (eg. Beta, Theta) suggestions can be tailored to specific levels of understanding which emphasize "more and better Beta, less Theta." As progress is made over the course of several sessions, patients are encouraged to use INAP on their own (self-hypnosis). If the clinician is executing the procedure correctly and the patient does their part the effects of enhanced Beta with inhibition of theta are usually so dramatic as to be immediately obvious on the computer screen feedback representation.

Efficacy of INAP alert hypnosis

The first tests of INAP alert hypnosis as an adjunct to neurotherapy were case studies (A. Barabasz & M. Barabasz, 1995, 1996; M. Barabasz & A. Barabasz, 1996) patients were all boys diagnosed with ADHD. All had prior treatment with psychostimulants and behavior modification. Most were in special classes at school because of their disorder. INAP appeared to greatly accelerate the response to neurotherapy. About half the usual number of sessions were required to achieve results similar to neurofeedback alone. At least three quarters of our cases responded with greatly reduced overactivity, improved attentiveness, improved school grades and deportment ratings. It was time to systematically examine the effects of INAP alert hypnosis using group data from an adequate number of patients.

Our efficacy studies are still in their infancy but progress, beyond the case study level, has been made involving independent researchers outside of our practice. Anderson et al. (1999, see also article in this Child Study Journal issue) randomly drew EEG data files from 16 ADHD patients treated in the previous year. Stanford Hypnotic Clinical Scale (Child Form) scores showed all participants were above average to highly hypnotizable (mean 5.8, range 4-7). All patients had EEG data from frontal (FP1. FP2) and midline sites (FZ, CZ, PZ). All received INAP with neurofeedback and neurofeedback alone in counterbalanced order. Anderson, Barabasz, Barabasz and Warner (see article in this issue of the Child Study Journal) found that INAP alert hypnosis neurofeedback trials

produced significantly ($p < .0001$) greater Beta-Theta ratios than neurofeedback alone. Since theta is associated with poor attention and concentration, the significant augmentation of beta with INAP alert hypnosis contrasted with neurofeedback alone provides rationale for the hypothesis that our technique potentiates the effects of neurotherapy for ADHD.

In the next test of INAP alert hypnosis as an adjunct to neurotherapy, Warner, A. Barabasz and M. Barabasz (see article in this Child Study Journal issue) randomly selected 19 of our terminated patient files (age mean = 12.1, range 7.6-20.2 years; 15 males, 4 females). All patients had met DSM IV ADHD criteria and had histories of four to ten years (mean 6.3) of psychostimulant drug and behavior modification treatment before seeing us. Parents' described prior treatments as problematic and ineffective. Parents completed the Attention Deficit Disorder Evaluation Scale (ADDES)-Home Version (McCarney, 1989) at the beginning of treatment and again at the end of treatment. Prior to administration of the post treatment ADDES test, therapist (AB) ratings were made as follows: 1 = recovered (cured), 2 = much improved, 3 = improved, 4 = no response to treatment.

Analysis of the data showed post test scores on each of the ADDES subscales were significantly ($p < .001$) lower than pretreatment scores. Patients had markedly decreased inattentiveness (IA), impulsivity (IP), and hyperactivity (H). Therapist's ratings correlated significantly ($p < .001$) with parents' post treatment ratings for each subscale ($r = .764$ IA. $r = .716$ IP, and $r = .709$ H). Age of patient was unrelated to either ADDES scores or therapist ratings ($r = .218$ to $.349$). Although we only had INAP alert hypnosis and neurotherapy data from patients seen by a single therapist (Arreed Barabasz) the remarkable improvements in ADHD symptomatology (Warner et al., 1999) are supported theoretically by the beta-theta ratios criteria data (Anderson et al., 1999) and empirically by the elimination of dependence on psychostimulants by all but four patients and the marked reduction of intake for those four. Furthermore, positive and substantial clinical changes were obtained in an average of 23.2 sessions, (3-14 weeks of treatment, mean = 11.2 weeks). a number well below the usual 40-80 sessions for neurotherapy alone. The rather remarkable outcomes were achieved despite the fact that all of these patients had long histories of previous treatment with traditional psychostimulants and behavior modification without perceiving

significant beneficial effects. While the problem that always arises in the study of the effectiveness of a therapy is to find out what aspects of the interventions are contributing most to outcome (the therapist or the procedure), we have no reason to believe that already discouraged parents would be more likely to rate our approach more favorably than their previous treatments without valid reasons for doing so. It is our hope that other practitioners and researchers, trained in hypnosis, will further test our approach and shed additional light on what appears to be a very promising treatment combination for those with attention deficit disorder.

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